

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) A method for performing mass spectrometry of sulfur atom-containing derivatives of an organic residue, characterized in that the method comprises ionizing a metal-organic residue complex into the derivatives, wherein the complex has the organic residue bound through a sulfur atom to the metal.

2. (Withdrawn) A method for performing mass spectrometry of a compound or salt thereof, characterized in that the method comprises ionizing a metal-organic residue complex into sulfur atom-containing derivatives,

wherein the metal-organic residue complex is represented by the general formula (I)



wherein R is an organic residue, S is a sulfur atom and n indicates a stoichiometric ratio of (R-S) group with respect to M¹ and is an integer equal to or greater than 1; and

wherein the compound is represented by the general formulae (II) and/or (III):



wherein R and S are the same as defined above.

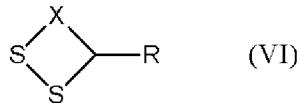
3. (Withdrawn) A method for performing mass spectrometry of a compound or salt thereof, characterized in that the method comprises ionizing a metal-organic residue complex into sulfur atom-containing derivatives,

wherein the metal-organic residue complex is represented by the general formula (IV):



wherein R is an organic residue, S is a sulfur atom, M¹ at both ends are same metal entities, X is a lower alkylene or a lower alkenylene;

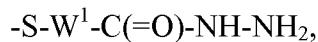
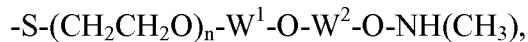
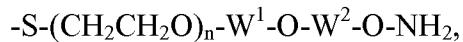
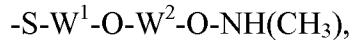
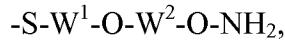
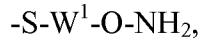
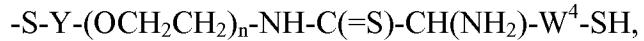
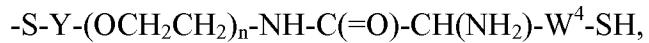
wherein the compound is represented by the general formulae (V) and/or (VI):



wherein R, S and X are the same as defined above.

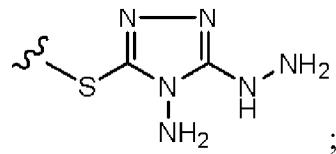
4. (Currently Amended) A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, the method comprising the following steps of:

1) contacting a metal-organic residue complex with a sugar chain or a sugar chain-containing substance under the conditions where the metal-organic residue complex and the sugar chain or sugar chain-containing substance may react with each other, wherein the metal-organic residue complex contains comprises a metal bound to an organic residue group represented by the following formula having one of the following structures:



-S-W¹-C(=S)-NH-NH₂,
-S-W¹-NH-C(=O)-CH(NH₂)-W⁴-SH,
-S-W¹-NH-C(=S)-CH(NH₂)-W⁴-SH
-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
-S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-Z⁶-SH,
-S-Z¹-O-Z³-CH(NH₂)-Z⁶-SH,
-S-Z¹-O-Z³-O-NH₂,
-S-Z¹-O-Z³-O-NH(CH₃),
-S-Z¹-O-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-O-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-O-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH
-S-Z¹-O-Z³-Z⁴-CH(NH₂)-Z⁶-SH
-S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
-S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or



wherein, Y, W¹ and W² are each independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted arylene or heteroarylene;

Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are each independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z⁶ is C1-C2 alkylene; and

n is an integer ranging from 1 to 10,

2) obtaining recovering the metal-organic residue complex bound to the sugar chain or the sugar chain-containing substance; and

3) ionizing the metal-organic residue complex bound to the sugar chain or the sugar chain-containing substance into sulfur atom-containing derivatives of the organic residue, and

wherein the metal comprises a surface which enables diffuse reflection of a laser beam.

5. (Withdrawn) A method according to any one of claims 1 to 4, wherein the metal has a surface enough to cause a diffuse reflection of a laser beam.

6. (Withdrawn) A method according to claim 5, wherein the metal is a fine metal particle.

7. (Withdrawn) A method according to any one of claims 1 to 4 and 6, wherein the metal is gold, silver, cadmium or selenium.

8. (Withdrawn) A method according to any one of claims 1 to 4 and 6, wherein the mass spectrometry is carried out by MALDI-TOF MS method.

9. (Withdrawn) A method according to any one of claims 1 to 3, wherein the organic residue is a group comprising a sugar chain or a sugar chain-containing substance.

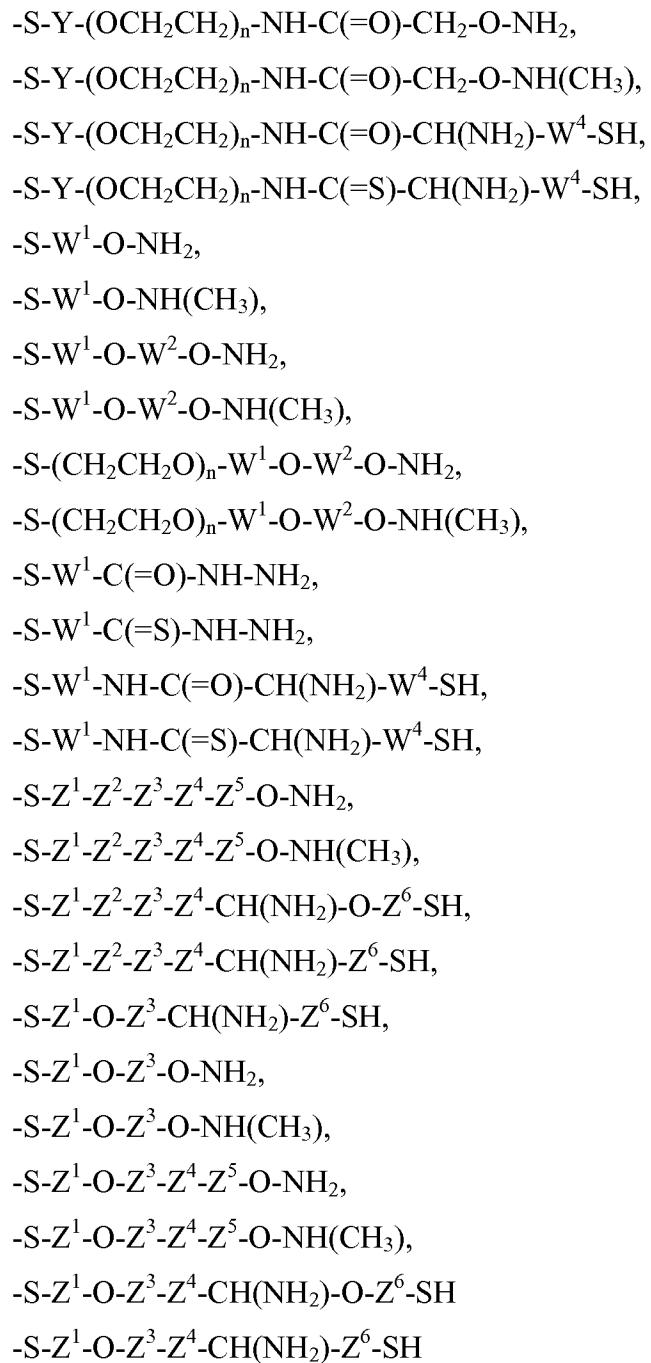
10. (Withdrawn) A method for performing mass spectrometry of a sulfur atom-containing analyte comprising the steps of:

1) reacting tetrachloroauric acid with a sulfur atom-containing analyte in the presence of a reducing agent;

2) obtaining a gold-analyte complex particle which has the analyte bound through the sulfur atom to the gold; and

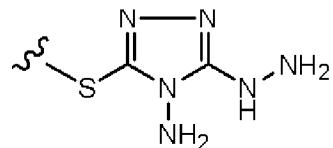
3) ionizing the obtained gold-analyte complex particles into a sulfur atom-containing analyte derivative.

11. (Withdrawn) A metal-organic residue complex containing a metal bound to a group represented by the following formula:



-S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
-S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or



wherein, Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted aryl or heteroarylen;

Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

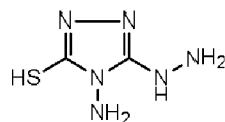
Z⁶ is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive.

12. (Withdrawn and Currently Amended) A method for producing metal-organic residue complex particles, wherein the method comprises reacting tetrachloroauric acid with a compound represented by the following formula:

$\text{--(S-Y-(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH}_2\text{--O--NH}_2)_2$,
 $\text{--(S-Y-(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH}_2\text{--O--NH(CH}_3)_2$,
 $\text{--(S-Y-(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH(NH}_2\text{)--W}^4\text{--SH})_2$,
 $\text{--(S-Y-(OCH}_2\text{CH}_2)_n\text{--NH--C(=S)--CH(NH}_2\text{)--W}^4\text{--SH})_2$,
 $\text{--(S-W}^1\text{--O--NH}_2)_2$,
 $\text{--(S-W}^1\text{--O--NH(CH}_3)_2$,
 $\text{--(S-W}^1\text{--O--W}^2\text{--O--NH}_2)_2$,
 $\text{--(S-W}^1\text{--O--W}^2\text{--O--NH(CH}_3)_2$,
 $\text{--(S-(CH}_2\text{CH}_2\text{O})_n\text{--W}^1\text{--O--W}^2\text{--O--NH}_2)_2$,
 $\text{--(S-(CH}_2\text{CH}_2\text{O})_n\text{--W}^1\text{--O--W}^2\text{--O--NH(CH}_3)_2$,
 $\text{--(S-W}^1\text{--C(=O)--NH--NH}_2)_2$,
 $\text{--(S-W}^1\text{--C(=S)--NH--NH}_2)_2$,
 $\text{--(S-W}^1\text{--NH--C(=O)--CH(NH}_2\text{)--W}^4\text{--SH})_2$,
 $\text{--(S-W}^1\text{--NH--C(=S)--CH(NH}_2\text{)--W}^4\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S-Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S-Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--CH(NH}_2\text{)--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--O--NH}_2)_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--O--NH(CH}_3)_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--O--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S-Z}^1\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S-Z}^1\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH})_2$,
 $\text{--(S-Z}^1\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH})_2$

or



, or a salt thereof, in the presence of a reducing agent,

wherein, Y, W¹ and W² are independently C1-C12 alkylene,

C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;Z¹ is substituted or unsubstituted aryl or heteroarylen;Z² is a nitrogen-containing heterocycle;Z³ and Z⁵ are independently C1-C12 alkylene;

Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z^6 is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive.

13. (Currently Amended) A method for trapping a sugar chain or a sugar chain-containing substance, characterized in that the method comprises comprising contacting a metal-organic residue complex with a sugar chain or a sugar chain-containing substance; under conditions where the metal-organic residue complex and the sugar chain or the sugar chain-containing substance may react with each other, wherein

the metal-organic residue complex has comprises a metal bound to an organic residue group represented by the following formula having one of the following structures:

-S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH₂,

-S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH₂-O-NH(CH₃),

-S-Y-(OCH₂CH₂)_n-NH-C(=O)-CH(NH₂)-W⁴-SH,

-S-Y-(OCH₂CH₂)_n-NH-C(=S)-CH(NH₂)-W⁴-SH,

-S-W¹-O-NH₂,

-S-W¹-O-NH(CH₃),

-S-W¹-O-W²-O-NH₂,

-S-W¹-O-W²-O-NH(CH₃),

-S-(CH₂CH₂O)_n-W¹-O-W²-O-NH₂,

-S-(CH₂CH₂O)_n-W¹-O-W²-O-NH(CH₃),

-S-W¹-C(=O)-NH-NH₂,

-S-W¹-C(=S)-NH-NH₂,

-S-W¹-NH-C(=O)-CH(NH₂)-W⁴-SH,

-S-W¹-NH-C(=S)-CH(NH₂)-W⁴-SH,

-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH₂,

-S-Z¹-Z²-Z³-Z⁴-Z⁵-O-NH(CH₃),

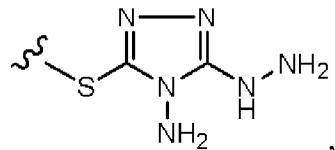
-S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,

-S-Z¹-Z²-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

-S-Z¹-O-Z³-CH(NH₂)-Z⁶-SH,

-S-Z¹-O-Z³-O-NH₂,
-S-Z¹-O-Z³-O-NH(CH₃),
-S-Z¹-O-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-O-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-O-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH
-S-Z¹-O-Z³-Z⁴-CH(NH₂)-Z⁶-SH
-S-Z¹-Z³-Z⁴-Z⁵-O-NH₂,
-S-Z¹-Z³-Z⁴-Z⁵-O-NH(CH₃),
-S-Z¹-Z³-Z⁴-CH(NH₂)-O-Z⁶-SH,
-S-Z¹-Z³-Z⁴-CH(NH₂)-Z⁶-SH,

or



wherein, Y, W¹ and W² are each independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted arylene or heteroarylene;

Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are each independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z⁶ is C1-C2 alkylene; and

n is an integer between ranging from 1 and to 10, and inclusive

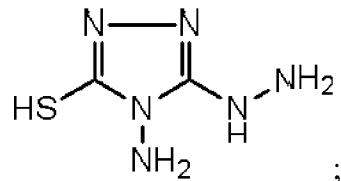
wherein the metal comprises a surface which enables diffuse reflection of a laser beam.

14. (Withdrawn) A method for measuring the molecular weight of a substance which may interact with an organic residue of a metal-organic residue complex, comprising the steps of:

- 1) contacting the metal-organic residue complex with a substance which may interact with the organic residue, wherein the metal is bound through a sulfur atom to organic residue;
- 2) obtaining the metal-organic residue complex bound to the substance which may interact; and
- 3) ionizing the obtained metal-organic residue complex into derivatives of the organic residue, wherein the organic residue contains a sulfur atom.

15. (Currently Amended) A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, the method comprising the steps of:

- 1) contacting an organic residue compound with a metal to obtain a metal-organic residue complex, wherein the compound is represented byhas the following formula:

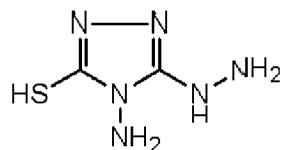


- 2) contacting the metal-organic residue complex obtained in 1) with a sugar chain or a sugar chain-containing substance under conditions where the metal-organic residue complex and the sugar chain or the sugar chain-containing substance may react with each other; and

- 3) ionizing the metal-organic residue complex bound to the sugar chain or sugar chain containing substance obtained in 2) into derivatives of the organic residue, wherein the derivatives of the organic residue contains comprise a sulfur atom, and wherein the metal comprises a surface which enables diffuse reflection of a laser beam.

16. (Currently Amended) A method for performing mass spectrometry of a sugar chain or a sugar chain-containing substance, the method comprising the steps of:

- 1) contacting an organic residue compound represented byhaving the following formula:



with a sugar chain or a sugar chain-containing substance under conditions where the compound and the sugar chain or the sugar chain-containing substance may react with each other to obtain an organic residue complex bound to the sugar chain or sugar chain containing substance;

2) contacting the organic residue complex bound to the sugar chain or sugar chain containing substance~~compound~~ obtained in 1) with a metal to obtain a metal- organic residue complex bound to the sugar chain or sugar chain containing substance; and

3) ionizing the metal-organic residue complex bound to the sugar chain or sugar chain containing substance obtained in 2) into derivatives of the organic residue, wherein the derivatives of the organic residue contains a sulfur atom, and wherein the metal comprises a surface which enables diffuse reflection of a laser beam.

17. (Withdrawn and Currently Amended) A composition for trapping a sugar chain, comprising

:

a compound represented by the general formula (II):

R-SH (II) or a salt thereof, wherein R is an organic residue; and -S is a sulfur atom;

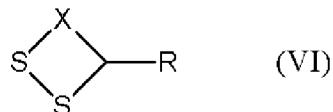
a compound represented by the general formula (III):

R-S-S-R (III) or a salt thereof, wherein, R and S are the same as defined above;

a compound represented by the general formula (V):

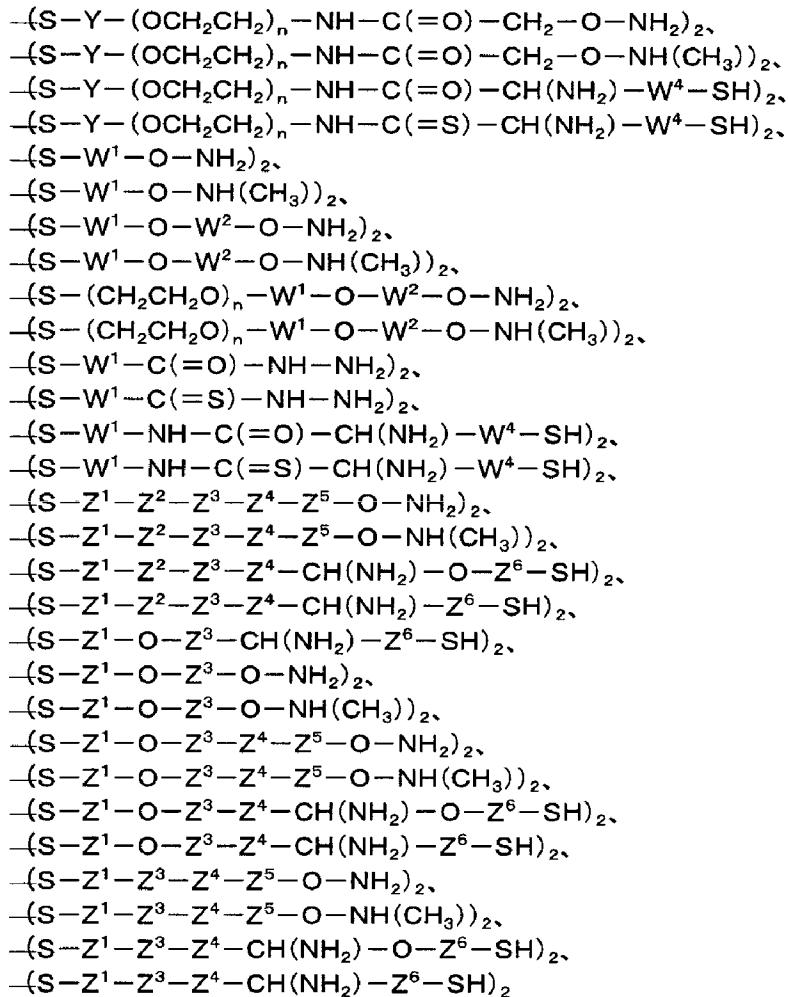
HS-X-CH(R)-SH (V) or a salt thereof, wherein R and S are the same as defined above; and X is lower alkylene or lower alkenylene; or

a compound represented by the general formula (VI):

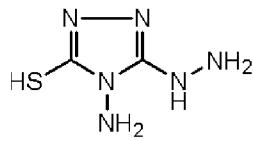


or a salt thereof, wherein, R, S and X are the same as defined above; or a mixture thereof.

18. (Withdrawn) The composition of claim 17 wherein the compound is represented by the following formula:



or



wherein Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

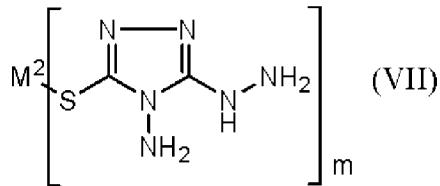
Z^1 is substituted or unsubstituted aryl or heteroarylen;
 Z^2 is a nitrogen-containing heterocycle;
 Z^3 and Z^5 are independently C1-C12 alkylene;
 Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;
 Z^6 is C1-C2 alkylene; and
n is an integer between 1 and 10, inclusive.

19. (Withdrawn) A metal-organic residue complex represented by the following formula:

$M^2-(S-Y-(OCH_2CH_2)_n-NH-C(=O)-CH_2-O-NH_2)_m,$
 $M^2-(S-Y-(OCH_2CH_2)_n-NH-C(=O)-CH_2-O-NH(CH_3))_m,$
 $M^2-(S-Y-(OCH_2CH_2)_n-NH-C(=O)-CH(NH_2)-W^4-SH)_m,$
 $M^2-(S-Y-(OCH_2CH_2)_n-NH-C(=S)-CH(NH_2)-W^4-SH)_m,$
 $M^2-(S-W^1-O-NH_2)_m,$
 $M^2-(S-W^1-O-NH(CH_3))_m,$
 $M^2-(S-W^1-O-W^2-O-NH_2)_m,$
 $M^2-(S-W^1-O-W^2-O-NH(CH_3))_m,$
 $M^2-(S-(CH_2CH_2O)_n-W^1-O-W^2-O-NH_2)_m,$
 $M^2-(S-(CH_2CH_2O)_n-W^1-O-W^2-O-NH(CH_3))_m,$
 $M^2-(S-W^1-C(=O)-NH-NH_2)_m,$
 $M^2-(S-W^1-C(=S)-NH-NH_2)_m,$
 $M^2-(S-W^1-NH-C(=O)-CH(NH_2)-W^4-SH)_m,$
 $M^2-(S-W^1-NH-C(=S)-CH(NH_2)-W^4-SH)_m,$
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH_2)_m,$
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH_2)_m,$
 $M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m,$

$M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,

or the general formula (VII):



wherein, M^2 is a metal;

m indicates a stoichiometric ratio of an organic residue with respect to M^2 and is an integer equal to or greater than 1, wherein the organic residue contains a sulfur atom;

Y , W^1 and W^2 are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W^4 is C1-C2 alkylene;

Z^1 is substituted or unsubstituted aryl or heteroarylen ;

Z^2 is a nitrogen-containing heterocycle;

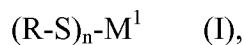
Z^3 and Z^5 are independently C1-C12 alkylene;

Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z^6 is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive.

20. (Withdrawn) A composition for trapping a sugar chain, comprising:
a metal-organic residue complex represented by the general formula (I):



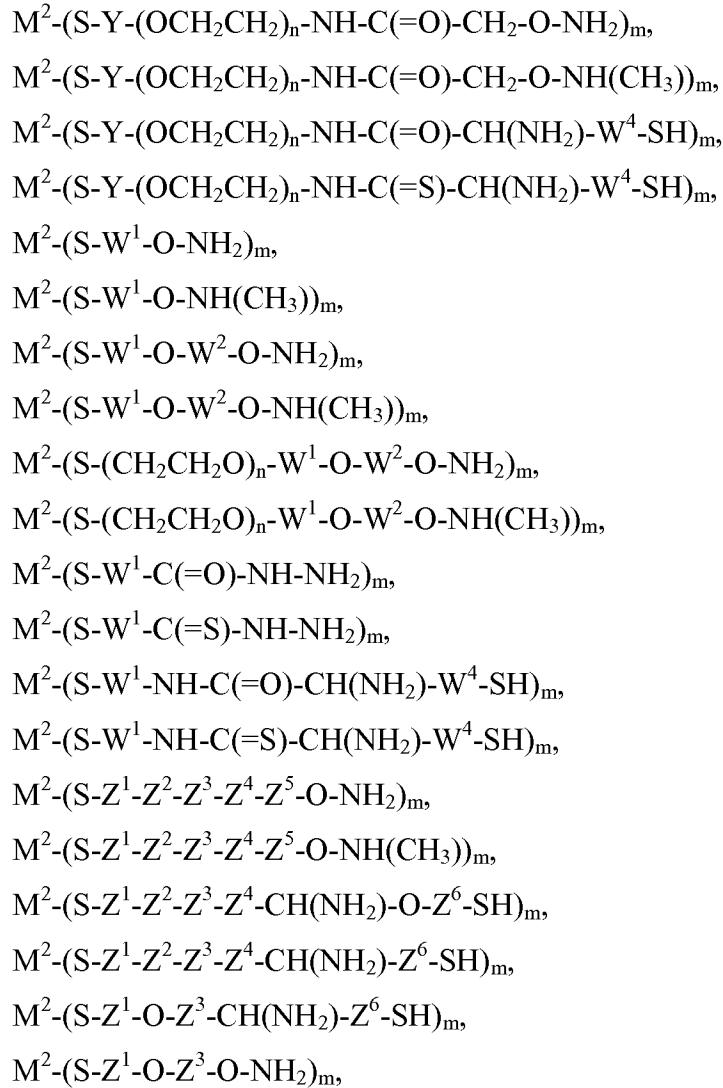
wherein R is an organic residue; S is a sulfur atom; M¹ is a metal; and n indicates a stoichiometric ratio of (R-S) group with respect to M¹ and is an integer equal to or greater than 1; or

a metal-organic residue complex represented by the general formula (IV):



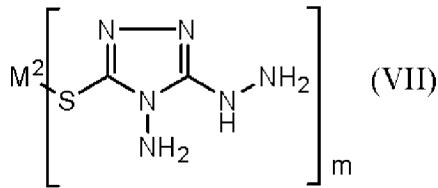
wherein R and S are the same as defined above, M¹ at both ends are a metal of the same substance and X is lower alkylene or lower alkenylene.

21. (Withdrawn) The composition of claim 20 wherein the metal-organic residue complex is represented by the following formula:



$M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m,$
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m,$
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m,$

or the general formula (VII):



wherein,

M^2 is a metal;

m indicates a stoichiometric ratio of an organic residue with respect to M^2 and is an integer equal to or greater than 1, wherein the organic residue comprises a sulfur atom;

Y , W^1 and W^2 are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W^4 is C1-C2 alkylene;

Z^1 is substituted or unsubstituted aryl or heteroarylen;

Z^2 is a nitrogen-containing heterocycle;

Z^3 and Z^5 are independently C1-C12 alkylene;

Z^4 is $-O-C(=O)$, $-O-C(=S)$, $-NH-C(=O)$, $-NH-C(=S)$, $-O-$ or $-S-$;

Z^6 is C1-C2 alkylene and

n is an integer between 1 and 10, inclusive.

22. (Withdrawn) A kit for mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising:

A) a compound represented by the general formula (II):

$$\text{R-SH} \quad (\text{II})$$

or a salt thereof, wherein R is an organic residue; and S is a sulfur atom;

a compound represented by the general formula (III) R-S-S-R

(III)

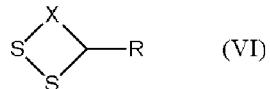
or a salt thereof, wherein R and S are the same as defined above;

a compound represented by the general formula (V):

$$\text{HS-X-CH(R)-SH} \quad (\text{V})$$

or a salt thereof, wherein R and S are the same as defined above; and X is lower alkenylene; or

a compound represented by the general formula (VI):



or a salt thereof, wherein R, S and X are the same as defined above; or a mixture thereof; and

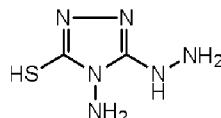
B) a metal.

23. (Withdrawn) A kit for mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising:

A) a sulfur atom containing derivatives of an organic residue, represented by the following formula:

$\text{--(S--Y--(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH}_2\text{--O--NH}_2)_2$,
 $\text{--(S--Y--(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH}_2\text{--O--NH(CH}_3)_2$,
 $\text{--(S--Y--(OCH}_2\text{CH}_2)_n\text{--NH--C(=O)--CH(NH}_2\text{)--W}^4\text{--SH)}_2$,
 $\text{--(S--Y--(OCH}_2\text{CH}_2)_n\text{--NH--C(=S)--CH(NH}_2\text{)--W}^4\text{--SH)}_2$,
 $\text{--(S--W}^1\text{--O--NH}_2)_2$,
 $\text{--(S--W}^1\text{--O--NH(CH}_3)_2$,
 $\text{--(S--W}^1\text{--O--W}^2\text{--O--NH}_2)_2$,
 $\text{--(S--W}^1\text{--O--W}^2\text{--O--NH(CH}_3)_2$,
 $\text{--(S--(CH}_2\text{CH}_2\text{O})_n\text{--W}^1\text{--O--W}^2\text{--O--NH}_2)_2$,
 $\text{--(S--(CH}_2\text{CH}_2\text{O})_n\text{--W}^1\text{--O--W}^2\text{--O--NH(CH}_3)_2$,
 $\text{--(S--W}^1\text{--C(=O)--NH--NH}_2)_2$,
 $\text{--(S--W}^1\text{--C(=S)--NH--NH}_2)_2$,
 $\text{--(S--W}^1\text{--NH--C(=O)--CH(NH}_2\text{)--W}^4\text{--SH)}_2$,
 $\text{--(S--W}^1\text{--NH--C(=S)--CH(NH}_2\text{)--W}^4\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S--Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S--Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--Z}^2\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--CH(NH}_2\text{)--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--O--NH}_2)_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--O--NH(CH}_3)_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--O--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH}_2)_2$,
 $\text{--(S--Z}^1\text{--Z}^3\text{--Z}^4\text{--Z}^5\text{--O--NH(CH}_3)_2$,
 $\text{--(S--Z}^1\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--O--Z}^6\text{--SH)}_2$,
 $\text{--(S--Z}^1\text{--Z}^3\text{--Z}^4\text{--CH(NH}_2\text{)--Z}^6\text{--SH)}_2$

or



wherein Y, W¹ and W² are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene;

W⁴ is C1-C2 alkylene;

Z¹ is substituted or unsubstituted arylene or heteroarylene;

Z² is a nitrogen-containing heterocycle;

Z³ and Z⁵ are independently C1-C12 alkylene;

Z⁴ is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-;

Z⁶ is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive; and
B) a metal.

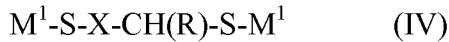
24. (Withdrawn) A kit for mass spectrometry of a sugar chain or a sugar chain-containing substance, comprising:

a metal-organic residue complex represented by the general formula (I):



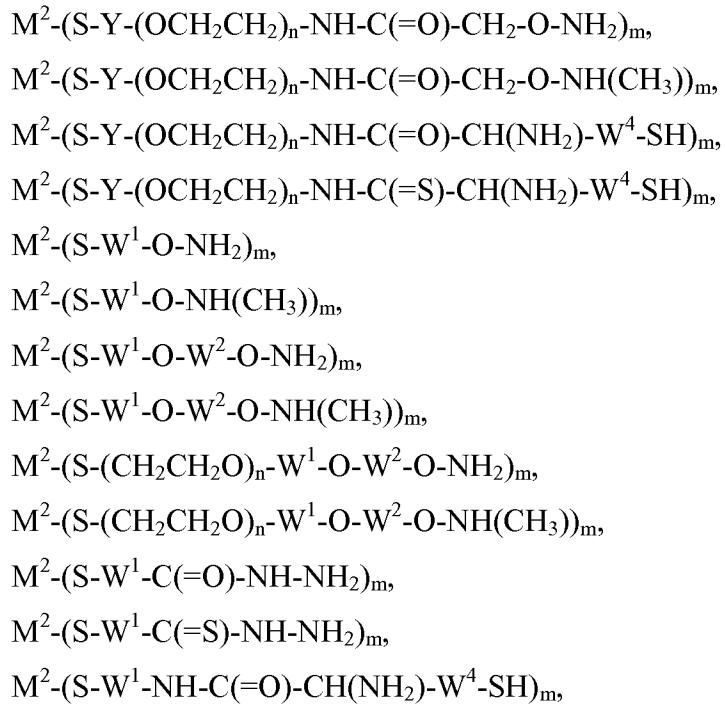
wherein, R is an organic residue, S is a sulfur atom, M¹ is a metal and n indicates a stoichiometric ratio of (R-S) group with respect to M¹ and is an integer equal to or greater than 1; or

a metal-organic residue complex represented by the general formula (IV):



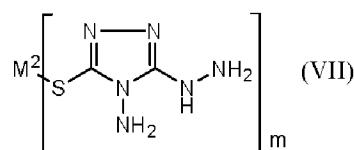
wherein R and S are the same as defined above, M¹ at both ends are same metal entities and X is lower alkylene or lower alkenylene.

25. (Withdrawn) The kit of claim 24 wherein the metal-organic residue complex is represented by the following formula:



$M^2-(S-W^1-NH-C(=S)-CH(NH_2)-W^4-SH)_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^2-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-O-Z^3-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-O-Z^3-O-NH_2)_m$,
 $M^2-(S-Z^1-O-Z^3-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-O-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH_2)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-Z^5-O-NH(CH_3))_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-O-Z^6-SH)_m$,
 $M^2-(S-Z^1-Z^3-Z^4-CH(NH_2)-Z^6-SH)_m$,

or the general formula (VII):



wherein, M^2 is a metal, m indicates a stoichiometric ratio of an organic residue with respect to M^2 and is an integer equal to or greater than one, the organic residue comprises a sulfur atom, Y , W^1 and W^2 are independently C1-C12 alkylene, C2-C12 alkenylene or C2-C12 alkynylene, W^4 is C1-C2 alkylene;

Z^1 is substituted or unsubstituted aryl or heteroarylen;

Z^2 is a nitrogen-containing heterocycle, Z^3 and Z^5 are independently C1-C12 alkylene, Z^4 is -O-C(=O), -O-C(=S), -NH-C(=O), -NH-C(=S), -O- or -S-, Z^6 is C1-C2 alkylene; and

n is an integer between 1 and 10, inclusive.

26. (Withdrawn) A method according to any one of claims 1 to 4 and 6, wherein the mass spectrometry is carried out by LDI-TOF MS method.

27. (Withdrawn) A method according to claim 10, wherein the mass spectrometry is carried out by LDI-TOF MS method.

28. (Withdrawn) A method according to claim 5, wherein the metal is gold, silver, cadmium or selenium.

29. (Withdrawn) A method according to claim 5, wherein the mass spectrometry is carried out by MALDI-TOF MS method.

30. (Withdrawn) A method according to claim 5, wherein the mass spectrometry is carried out by LDI-TOF MS method.